

## **Claims**

1. A hybrid switch actuator having six positions that are stable in the absence of current and in which displacement occurs between an initial position and a target position under the action of a current, for operation of a microwave switch, said actuator comprising:

- (a) a stator having six pole shoes, each pair of opposed pole shoes being associated with a common exciting coil;
- (b) a rotor package rotatable along a rotation axis and adapted to be positioned within said stator and having two pairs of rotor poles magnetized transversely in alternate directions, said rotor package including:
  - (i) a permanent magnet ring magnetized along the rotation axis;
  - (ii) two end caps adapted to be engaged around said permanent magnet ring, each end cap having two maximum radius regions that each correspond to the area of each of the stator pole shoes;
- (c) such that when two diametrically opposed stator pole shoes having a first polarity are excited through their associated common exciting coil, said stator pole shoes attract two diametrically opposed rotor poles having an opposite polarity to said first polarity and repel the remaining two rotor poles such that each rotor pole associated with a maximum radius region can be precisely aligned with a stator pole associated with a stator pole shoe.

2. The actuator of claim 1, wherein each end also includes four reduced radius regions, each reduced radius region having a radius that is less than the radius of the maximum radius region, each maximum radius region having two of said four reduced radius regions positioned adjacent therein.

3. The actuator of claim 1, wherein said end caps are separated from each other by at least 1.5 mm.
4. The actuator of claim 1, wherein rotor package is adapted to move from any initial position to any target position by moving 60°.
5. The actuator of claim 2 in combination with a microwave T-switch, wherein said maximum radius regions and said minimum radius regions are dimensioned to match the torque of the actuator to said microwave T-switch.